A Study on Computer Uses among Teacher Educators in Teacher Training Institutions in Tamil Nadu

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Abstract: *Within the theoretical constructs of teacher innovations and the role of technology in learning, the present study was designed to assess teachers' current computer knowledge, and the factors that affect the integration and application of the computer in the classroom in two types of teacher training institutions in Tamil Nadu.*

One type of teacher training institution (labeled DIETs) was chosen to represent the government managed institutions, another type of institution (labeled TTIs) was chosen to represent the privately managed institutions. All full-time teachers from both DIETs and TTIs became the population for the study.

This study employed survey research methodology. The survey items were carefully developed to suit subjects in Tamil Nadu. The survey instrument was designed to elicit data relevant to two research questions of interest. Responses were collected and the data were analyzed using the SPSS statistical package.

The data analysis reveals that the majority of teachers in DIETs show very positive attitudes toward computer and there is a potential to increase computer use among them. The high cost of computers in India and the lack of time to learn and use the computer seem to be the most significant factors that prevent them from using or learning more about computers.

Introduction

The potential use of microcomputers in education, most notably in Computer-Assisted Instruction (CAI), has been widely recognized and documented. Research shows that computers, when used appropriately in instruction, enhance student learning, increase motivation, improve attendance, induce positive attitude and change. In research activity, computers are critical tools that can be used to assist the acquisition and generation of information and to enhance the personal productivity of faculty in their professional work. In addition, researchers report that computer-assisted instruction not only provides individualized instruction and self-paced learning, but also frees instructors and administrators from rote and repetitive tasks and administrative chores. Computers have made possible immediate feedback for learners and automatic collection of performance

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records and evaluative data for instructors.

To implement CAI successfully and to integrate computers into the classroom, the first step is to prepare computer literate teachers, that is, to prepare teachers who have the ability to cope comfortably and effectively with the computer. It is important for teachers, as many researchers have repeatedly emphasized, to acquire computer literacy and to accept the computer as a versatile educational tool before the computer can be utilized productively. It is teachers who must assume responsibilities and leadership positions for shaping the educational use of computers. If teachers know how to use computers successfully in their instruction, they will have increased control over-learning. "The teachers' attitude," as one researcher points out, "is a critical element. To make good educational use of the new computing power requires that the teachers be flexible and open to new instructional techniques".

Need for the Study

As computers become more and more common in higher education in Tamil Nadu, educators are turning their attention to the computer as an important tool as well as an instructional aid for improving the instructional process. However, there is only very limited information about the present status of teachers' – computer knowledge, computer uses, attitudes toward computers, and the relationship between demographic variables and computer knowledge, uses, and attitudes in Teacher Training Institutions. An investigation of these aspects of educational computing might help to assure future success and effectiveness in the process of large-scale integration of computers in education in Tamil Nadu.

Today almost all the schools in Tamil Nadu are attempting to make use of the computers either in the classroom or in the school office. The District Institute of Education and Training (DIET) is an educational institution meant for giving in-service training to teachers working in schools and pre-service training to young students to become teachers. These DIETs need to be up-to-date and modern in their training components. Moreover, the teachers in DIETs must possess the knowledge and skills related to the effective application of computers while training the trainees. So far, little training has been given to DIET teachers. If an adequate and large scale training programme on computer education is to be organized for teachers in DIETs, their present knowledge of computers and skills are to be surveyed and assessed. Hence the present study has been undertaken.

Objective of the Study

The present study is undertaken with the following objective:

To study what extent the computers are used by the teachers in DIETs and TTIs.

Research Questions

1. How are computers used in the two types of Teacher Training Institutions, namely,

District Institute of Education and Training (DIETs) and Teacher Training Institutions (TTIs)?

2. What are the areas Computer is being used in DIETs and TTIs?
3. What are the barriers that prevent the teachers from learning more about computers in DIETs and TTIs?
4. How often do teachers in DIETs and TTIs use the computers?

Methodology

The size of the sample in the present study was 326 teachers in DIETs (District Institutes of Education and Training managed by the Government) and 127 teachers in TTIs (Teacher Training Institutions managed by the private agencies). More than 50 per cent of the population was included as the sample of the study.

The survey instrument was developed in a two-step process planning and reviewing. Survey instruments, especially questionnaires to gather information about faculty knowledge and uses of computers and faculty attitudes toward computers, were studied. Based on information derived from the literature review, a questionnaire appropriate to Teacher Training Institutions was constructed.

In step two, after construction of the first draft of the questionnaire, it was submitted to several faculty members for review and suggestions. At the same time questionnaire was given for review to the staff members of Ramanujan Computing Center, Anna University, Chennai. The reviewers provided valuable criticism and many constructive suggestions for improvement. After repeated revisions, a final draft of the questionnaire was developed.

The returned questionnaires were numbered and coded. The SPSS statistical software was used to calculate frequencies, reliability coefficients, and the Krusykal-wallis analysis of the survey data.

Results and Discussion

Purposes for computer-use in DIETs and TTIs

To answer the question, i.e., for which tasks computers are used in DIETs and TTIs? the responses of 453 teachers (DIETs=326; TTIs=127) were analysed and the data were presented in Tables 1 and 2.

About 35 per cent of the respondents in DIETs reported that computers had been used in all the six tasks mentioned in the Table No.1. Likewise nearly 20 per cent of respondents in TTIs reported that computers had been used in all the six tasks mentioned in Table No.2. In both type of educational institutions, from 65 per cent to over 80 per cent of the respondents who have used computers reported that they were able to perform a variety of computer tasks "Never" or "Occasionally", as shown in Tables Nos. 1 and 2. Overall, faculty in DIETs claimed greater computer skills than the teachers in TTIs. In both type of institutions, the percentage is much higher for "Never" than for "Alwlays".

Table-1: Purposes for computer-use: Tasks in DIETs (N=326)

Sl. No.	Tasks	Always		Frequently		Occationally		Never	
		N	%	N	%	N	%	N	%
1.	To write papers, reports, or other documents	100	30.7	14	4.3	18	5.5	194	59.5
2.	To perform scientific computations or statistical data analysis	103	31.6	19	5.8	10	3.1	194	59.5
3.	To write and "debug" computer programs	99	30.4	18	5.5	15	4.6	194	59.5
4.	To manage scientific data collection or monitor research	98	30.1	18	5.5	16	4.9	194	59.5
5.	For data management or spreadsheet applications	97	29.8	19	5.8	14	4.3	196	60.1
6.	To prepare course-related materials such as graphics, drawings and other visual displays of information	100	30.7	18	5.5	12	3.7	196	60.1

Table-2: Purposes for computer-use: Tasks in TTIs (N=127)

Sl. No.	Tasks	Always		Frequently		Occational		Never	
		N	%	N	%	N	%	N	%
1.	To write papers, reports or other documents	16	12.6	8	6.3	9	7.1	94	74.0
2.	To perform scientific computations or statistical data analysis	17	13.4	7	5.5	7	5.5	96	75.6
3.	To write and "debug" computer programs	19	15.0	6	4.7	2	1.6	100	78.7
4.	To manage scientific data collection or monitor research	16	12.6	11	8.6	2	1.6	98	77.2
5.	For data management or spreadsheet applications	19	15.0	6	4.7	4	3.1	98	77.2
6.	To prepare course-related materials such as graphics, drawings and other visual displays of information	15	11.8	14	11.0	2	1.6	96	75.6

Specific Use

To answer the question, i.e., what is the computer specifically used for? the responses of 453 teachers (DIETs=326; TTIs=127) were analysed and the data were presented in Table 3.

Table-3: The distribution of respondents of computer use for specific purposes*

Sl. No.	Purposes	DIETs		TTIs (127)	
		N	%	N	%
1	Pre-Service trainings	171	52.5	58	45.7
2	In-Service trainings	175	53.7	7	5.5
3	Resource support	179	54.9	36	28.3
4	Action Research	164	50.3	10	7.7

* Only the number of users reported.

Table No. 3 shows that about 52 per cent of teachers in DIETs reported that computers could be used in pre-service trainings in their institutions. Whereas in TTIs only 45.7 per cent of teachers reported that computers could be used in pre-service trainings. Further 53.7 per cent of teachers in DIETs reported that computers could be used in In-service training. Whereas in TTIs only 5.5 per cent of teachers reported that computers could be used in in-service trainings. Also, it is evident from the Table that nearly 50 per cent of the teachers in DIETs reported utilising the computers for Resource support and Action Research purposes. But only 7.7 per cent of teachers in TTIs reported that computer could be used in Action Research. It may be due to the reasons that management of private teacher training institutions do not encourage their faculty members to do Action Research.

Barriers to learning about computers

The responses of 453 teachers (DIETs=326; TTIs=127) were analysed to find out about the barriers that prevent the teachers from learning about computers, and the data were presented in Table 4.

Table-4: Barriers to learning more about computers*

Sl. No.	Barriers	DIETs		TTIs	
		N	%	N	%
1	Lack of time	63	19.3	37	29.1
2	Lack of interest in computers	57	17.5	38	29.9
3	Lack of adequate training	265	81.3	89	70.0
4	Lack of external incentives	267	81.9	89	70.0
5	Lack of equipment and software	267	81.9	89	70.0

* Only the number of users reported.

Table-4 shows that over 80 per cent of teachers in DIETs considered lack of adequate training, lack of external incentives, lack of equipment and software as the most important barriers that kept them from knowing or learning more about computers. To them lack of time and lack of interest in computers are not great barriers for the teachers to learn more about computers, because only a small percentage (19.3%, 17.5%) of teachers reported lack of time and lack of interest in computers as barriers.

While in TTIs, 70 per cent of the teachers considered lack of adequate training, lack of external incentives, lack of equipment and software as the most important barriers that kept them from knowing or learning more about computers. Nearly 70 per cent of teachers in TTIs reported that lack of time and lack of interest in computers are not great barriers for the teachers to learn more about computers.

Frequency of the use of computers

To find out about the frequency of computer use, the responses of 453 teachers (DIETs=326; TTIs=127) were analysed and the data were presented in Table 5.

Table-5: Frequency of using the computers by all the respondents*

Sl. No.	Frequency	DIETs		TTIs	
		N	%	N	%
1	Daily	28	8.6	9	7.1
2	Weekly	63	19.3	13	10.2
3	Monthly	82	25.2	27	21.3
4	Rarely	153	46.9	78	61.4

* Only the number of users reported

Table No.5 shows that only 27.9 per cent of teachers in DIETs reported using computers frequently. Again only 52.2 per cent of the teachers claimed that they use computers occasionally. Further the tabel shows that a large percentage of teachers (46.9%) reported rarely having used a computer.

Also it is evident from the above table that only about 17 per cent of teachers in TTIs reported using computers frequently. Again only 21.3 per cent of the teachers claimed that they use computers occasionally. Further the table shows that a large percentage of teachers (61.4%) reported never having used a computer.

Conclusions

The highlights of the findings of the study lead to offer the following conclusions. As the lack of computer facilities has been found to be a primary deterrent to the development of computer education in Tamil Nadu teacher training institutions, efforts to provide sufficient number of computers to the teacher training institutions should be encouraged. More funds should be allocated to purchase computer hardware for teacher training institutions. This kind of long-term investment in teacher training institutions will enhance teachers computer knowledge and computer education in all over the DIETs in Tamil Nadu. Second, there is an immediate need to develop good, appropriate software and educational multimedia kit Compact Discs so that the existing limited number of computers in DIETs in Tamil Nadu can be fully utilized. Since the lack of appropriate software to use in a classroom setting was found to be one of the barriers that inhibit the integration of computers into the curriculum, it is important for software developers to design and produce software according to teachers' and learners' needs. This can be accomplished by giving seminars and workshops to developers so that they learn about

fundamental instructional learning principles for designing and producing software that is tailored to various needs. Teachers, on the other hand, should also establish criteria for evaluating existing software so that limited funds can be spent on the more useful software rather than on software that is later found to be useless. Third, in DIETs and TTIs teachers' computer training should be enhanced so that they will be able to make full use of existing computers and to integrate computers into their classroom. Since a significant percentage of teachers reportedly developed their computer knowledge and skills through self-study or training from their own departments, the departments should make reference material readily accessible, and department computer specialists or coordinators should be available when technical support or assistance is needed. To make the available training more effective, a training plan should be developed carefully, with input from the teachers and potential computer users, so that the goals will be attainable and the specific objectives can be achieved successfully.

In addition, since younger teachers with higher academic degrees in teacher training institutions seem to have better computer skills and more computer knowledge than older faculty members and those with lower academic degrees. Different types of training sessions should be planned for different training groups. During training, a relaxed attribute should be induced so that teachers can overcome their own computer anxiety or lack of self-confidence. Practical applications should be emphasized and evaluation of needs and goals should be conducted periodically, with modification of the training plan to be made accordingly.Training seminars or sessions in the two type of teacher training institutions should address areas of common interest, including but not limited topics on computer networking, computer operation, criteria for software selection, and utilization of specific application programmes.

References

AACTE Task Force on Technology (1987) The challenge of electronic technologies for colleges of education, *Journal of Teacher Education,* 18(6), 25-29.

Adams, D. (1985) *Computers and Teacher Training: A Practical Guide.* New York: The Haworth Press.

Anderson, C.A. (1983) Computer literacy: Changes for teacher education, *Journal of Teacher Education.* 16(5), 6-9.

Balasubramanian, N. (1993) *A Study in Cognitive Attainment of School Children in Computer Education.*In Quest of Bharathiya Shikshan. Jan. p.38-40.

Best John, W. (1983) *Research in Education,* Fourth edition 1981 rpt. New Delhi: Prentice-Hall of India.

Buch, M.B. (1979) (ed.) *Second Survey of Research in Education.* Baroda: Society for Educational Research and Development (SERD).

Choi Serie. (1991) *Teacher attitude toward computers as an essential variable for an implementation of computer-assisted instruction in Korean Secondary school.* Dissertation Abstract International, Vol.40 June.

Clark, C. & Grant, R. (1991) Implementing computer technology in educational settings, *Journal of Educational Technology Systems, 19(4), 313-326.*

Johnson, D. & Hoot. (1986) The birth and nurturing of a new discipline, *Computers in Schools,* 8(1/2/3), 5-13.

Mary Jo Langhome. (et al.). (1989) *Teaching with Computers* : A New Menu for the 90's. London: Kogan Page.

Narayanasamy, M. (2000) *Computer Knowledge, Interests, Attitudes and uses among Teachers in DIETs in Tamil Nadu.* Unpublished Doctoral Dissertation: Unpublished, Madurai Kamaraj University, Madurai.

Rowntree Derek. (1982) *Educational Technology in Curriculum Development.* London: Haper & Row.

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